

**What is claimed is:**

1. A method for marking a liquid for identification purposes comprising the steps of:
  - 5 (a) selecting at least a first marker and a second marker, each of the markers being miscible with a liquid, and each of the markers having an absorbance spectrum with at least one wavelength range within which the marker's absorbance is differentiable from the absorbance of the liquid and any other marker in the liquid, and
  - (b) mixing the markers in the liquid so that the ratio of the concentration of the
  - 10 first marker to the concentration of the second marker substantially equals a predetermined value said value serving as an identifier for the liquid,
  - whereby measuring the concentrations of the first marker and the second marker, and comparing the ratio of the measured concentration of the first marker to the measured concentration of the second marker with a look up table of the predetermined
  - 15 value assists in identifying the liquid.
2. The method of claim 1 wherein at least one of the markers is an organic dye.
- 3 The method of claim 1 wherein the first marker is cyanobenzene, and the second
- 20 marker is isotopically enriched cyanobenzene.
4. The method of claim 1 wherein the first marker and the second marker each have an absorption band in the infrared or visible portions of the electromagnetic spectrum.
- 25 5. The method of claim 1 wherein the concentration of the first marker and the concentration of the second marker are each a multiple of a selected basis concentration.
6. The method of claim 1 wherein the liquid is a petroleum product.
- 30 7. The method of claim 6 wherein the petroleum product is gasoline.

8. The method of claim 1 wherein the second marker is formed from the first marker by isotopic substitution of at least one of the atoms of the first marker.

9. A method for assisting in the identification of a marked liquid comprising the  
5 steps of:

(a) measuring the concentrations of at least a first marker and a second marker in a liquid,

each of the markers being miscible with the liquid, and

each of the markers having an absorbance spectrum with at least one wavelength  
10 range where the marker's absorbance is differentiable from the absorbance of the liquid  
and any other marker in the liquid; and

the markers being mixed in the liquid so that the ratio of the concentration of the first marker to the concentration of the second marker substantially equals a predetermined value, and

15 (b) comparing the ratio of the measured concentration of the first marker to the measured concentration of the second marker with a look up table of the predetermined values

so as to assist in identifying the liquid.

20 10: The method of claim 9 wherein the measuring step comprises measuring the concentrations of the markers with an absorption spectrometer.

11. The method of claim 9 wherein the measuring step comprises measuring the concentrations of the markers with a fluorescence spectrometer.

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12. The method of claim 9 wherein the measuring step comprises measuring the concentrations of the markers with chemical assays.

13. The method of claim 9 wherein the measuring step comprises measuring the  
30 concentrations of the markers using Raman light scattering.

14. An apparatus for assisting in the identification of a marked liquid, the apparatus comprising:

(a) vessel for receiving a liquid including at least a first marker and a second marker,

5 each of the markers being miscible with the liquid, and

each of the markers having an absorbance spectrum with at least one wavelength range where the marker's absorbance is differentiable from the absorbance of the liquid and any other marker in the liquid; and

the markers being provided in the liquid so that the ratio of the concentration of  
10 the first marker to the concentration of the second marker substantially equals a predetermined value;

(b) means for measuring the concentrations of at least the first marker and the second marker in the liquid, and

(c) comparison element for comparing the ratio of the measured concentration of  
15 the first marker to the measured concentration of the second marker with a look up table of the predetermined value so as to assist in the identification of the liquid.

15. The apparatus of claim 14 wherein the measurement means is an absorption spectrometer.

20 16. The apparatus of claim 14 wherein the measurement means is a fluorescence spectrometer.

17. The apparatus of claim 14 wherein the comparison element further comprises  
25 means for determining whether at least the concentration of the first marker and the concentration of the second marker are multiples of a selected basis concentration.

18. The apparatus of claim 14, wherein the comparison element further comprises a dedicated microprocessor.

30 19. A marker composition for identification of a liquid comprising:

at least a first marker and a second marker, each of the markers being miscible with the liquid, and each of the markers having an absorbance spectrum with at least one wavelength range within which the marker's absorbance is differentiable from the absorbance of the liquid and any other marker in the liquid,

5 the markers being mixable in the liquid so that the ratio of the concentration of  
the first marker to the concentration of the second marker substantially equals a  
predetermined value said value serving as an identifier for the liquid,

whereby measuring the concentrations of the first marker and the second marker, and comparing the ratio of the measured concentration of the first marker to the measured concentration of the second marker with a look up table of the predetermined value assists in identifying the liquid.

20. The marker composition of claim 19 wherein at lease one of the markers is not visually detectable in the liquid.

21. The marker composition of claim 19 wherein at least one of the markers is detectable by a characteristic infrared absorption profile.

22. The marker composition of claim 19 wherein at least one of the markers is  
20 selected from the group comprising cyanobenzene, benzyliisocyanate, phtalocyanine,  
naphthalocyanine, nickel-dithiolene complexes, aminium compounds of aromatic  
amines, methine dyes and azulenesquaric acid dyes.

23. The marker composition of claim 19 wherein at least one of the markers is an  
25 isotopically enriched compound.

24. A method for marking a liquid for identification purposes comprising the steps of:

providing a liquid, and  
30 mixing in the liquid a compound that absorbs and/or fluoresces in the mid-infrared range, said compound selected from the group consisting of cyanobenzene,

benzylisocyanate, phthalocyanine, naphthalocyanine, nickel-dithiolenes complexes, aminium compounds of aromatic amines, methine dyes and azulenescaric acid dyes.

whereby measuring the concentrations of the first marker and the second marker, and comparing the ratio of the measured concentration of the first marker to the measured concentration of the second marker with a look up table of the predetermined value assists in identifying the liquid.

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